

Bellringer

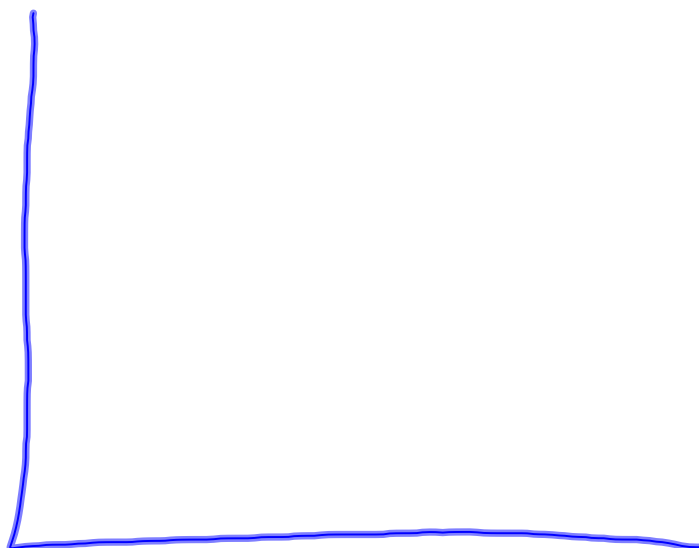
→ What is the difference
between speed, acceleration,
and velocity?

Speed
Fast
Slow

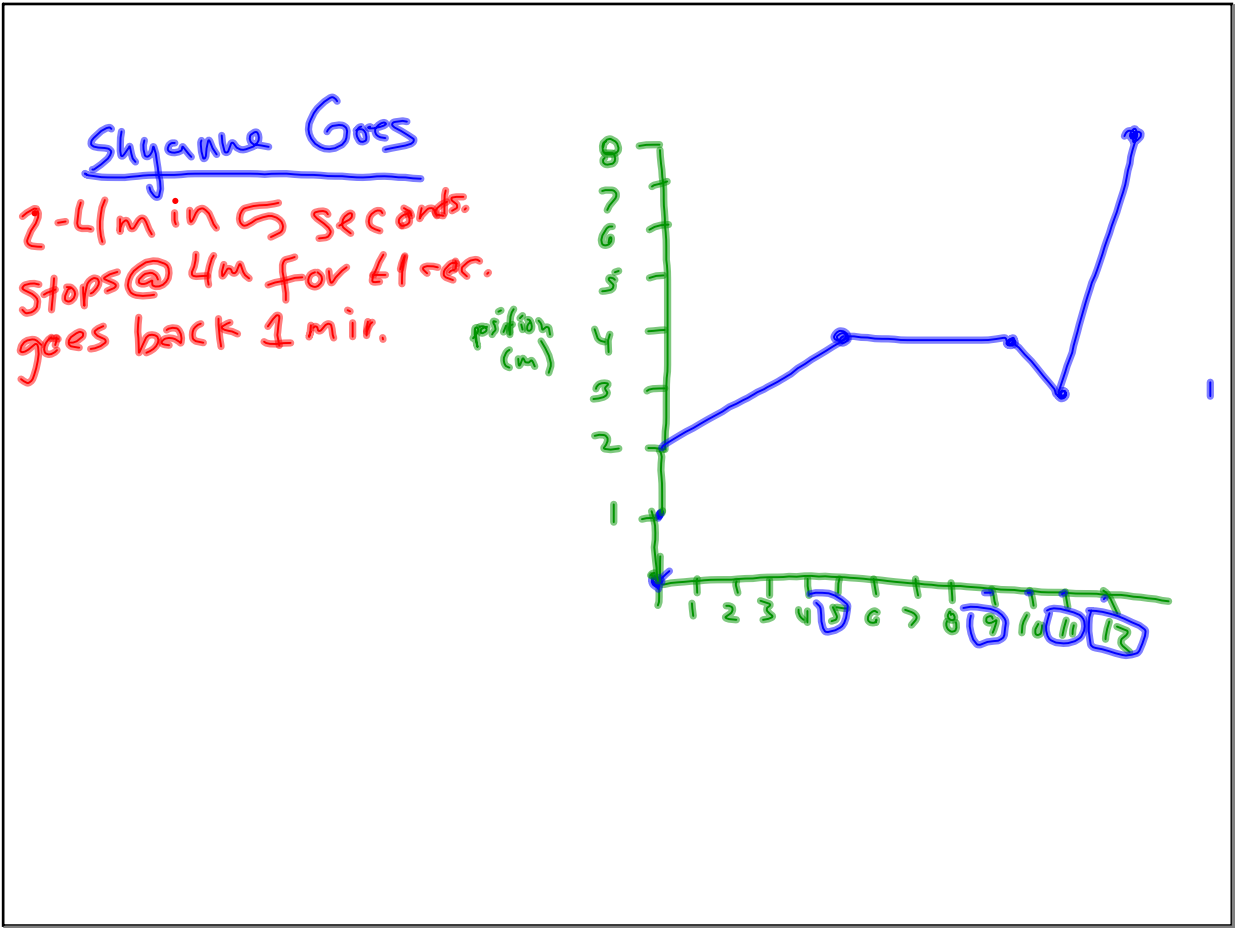
Acceleration
how much you
speed up

↗ directional
component
Velocity
28 m/s

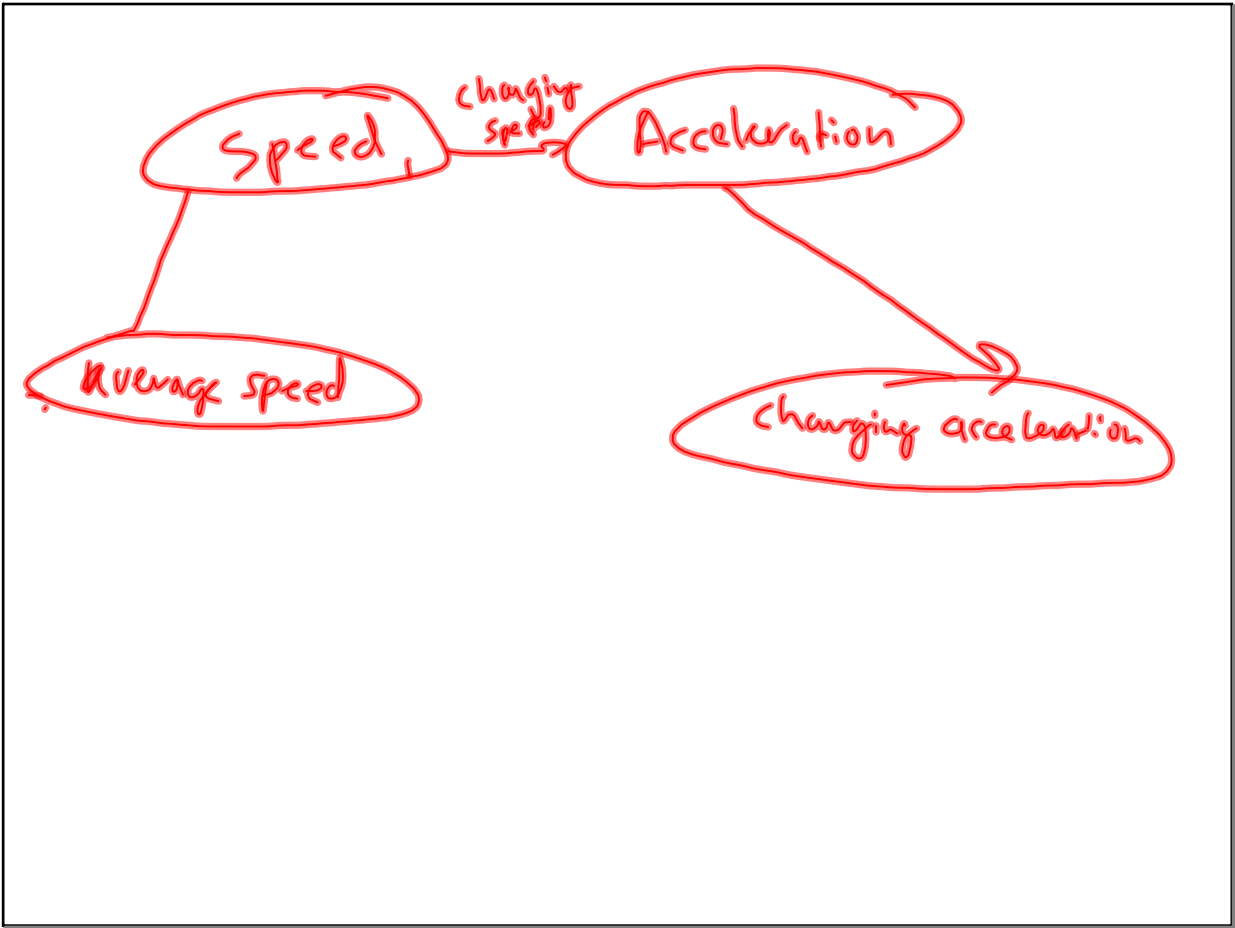
Sep 23-10:03 AM



Sep 23-10:22 AM



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Bellringer

a. Draw position-time graph based on the following data: (units are meters, seconds)

Walking: 10 m in 2 seconds
 Stopping: 0 m in 2 seconds
 Running: 30 m in 2 seconds

* Find the acceleration:
 Use speeds up from 40 m/s to 60 m/s in 10 seconds

→ Jose travels 72 miles in 12 hours and 9 minutes
 What is the velocity in miles/second.

$$v = \frac{d}{t} = \frac{72 \text{ miles}}{12 \text{ hours} + 9 \text{ minutes}} = \frac{72 \text{ miles}}{729 \text{ minutes}} = \frac{72 \text{ miles}}{729 \times 60 \text{ seconds}} = \frac{72 \text{ miles}}{43740 \text{ seconds}} = 1.64 \times 10^{-3} \text{ miles/second}$$

acceleration = $\frac{v_f - v_i}{t_f - t_i}$
 Erik accelerates from 20 m/s to 40 m/s in 5 seconds

$$a = \frac{\Delta v}{\Delta t} = \frac{40 \text{ m/s} - 20 \text{ m/s}}{5 \text{ s}} = \frac{20 \text{ m/s}}{5 \text{ s}} = 4 \text{ m/s}^2$$

Anker accelerates from 60 km/hr to 95 km/hr in 5 seconds

$$a = \frac{\Delta v}{\Delta t} = \frac{95 \text{ km/hr} - 60 \text{ km/hr}}{5 \text{ s}} = \frac{35 \text{ km/hr}}{5 \text{ s}} = 7 \text{ km/hr/s}$$

Andy accelerates 120 km/h to 240 km/h in 2 minutes

$$a = \frac{\Delta v}{\Delta t} = \frac{240 \text{ km/h} - 120 \text{ km/h}}{2 \text{ min}} = \frac{120 \text{ km/h}}{2 \text{ min}} = 60 \text{ km/h/min}$$

Sydney accelerates from 120 km/hr to 80 km/hr. She does this in 3 seconds
 What is her acceleration?

velocity
 time graph

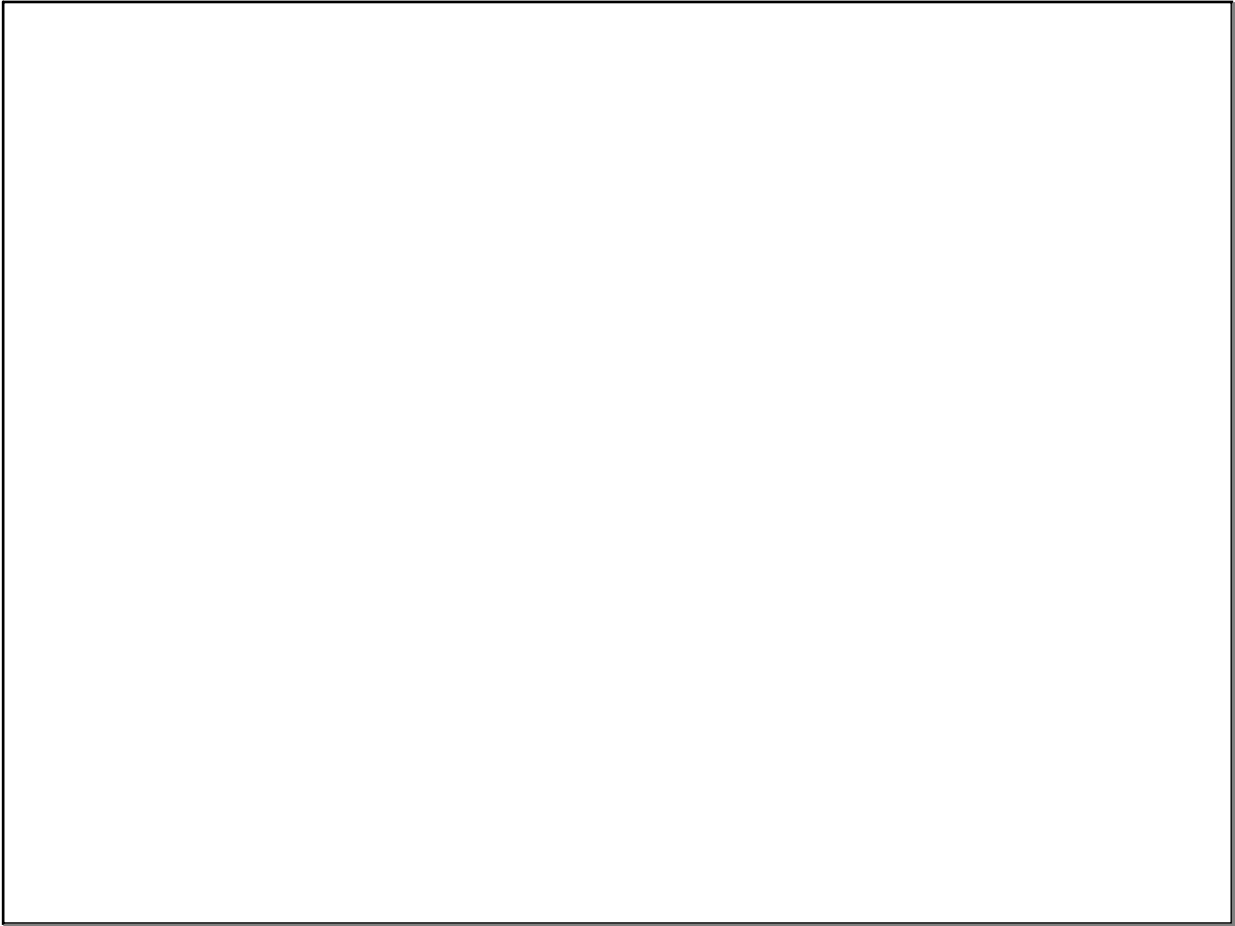
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191 km

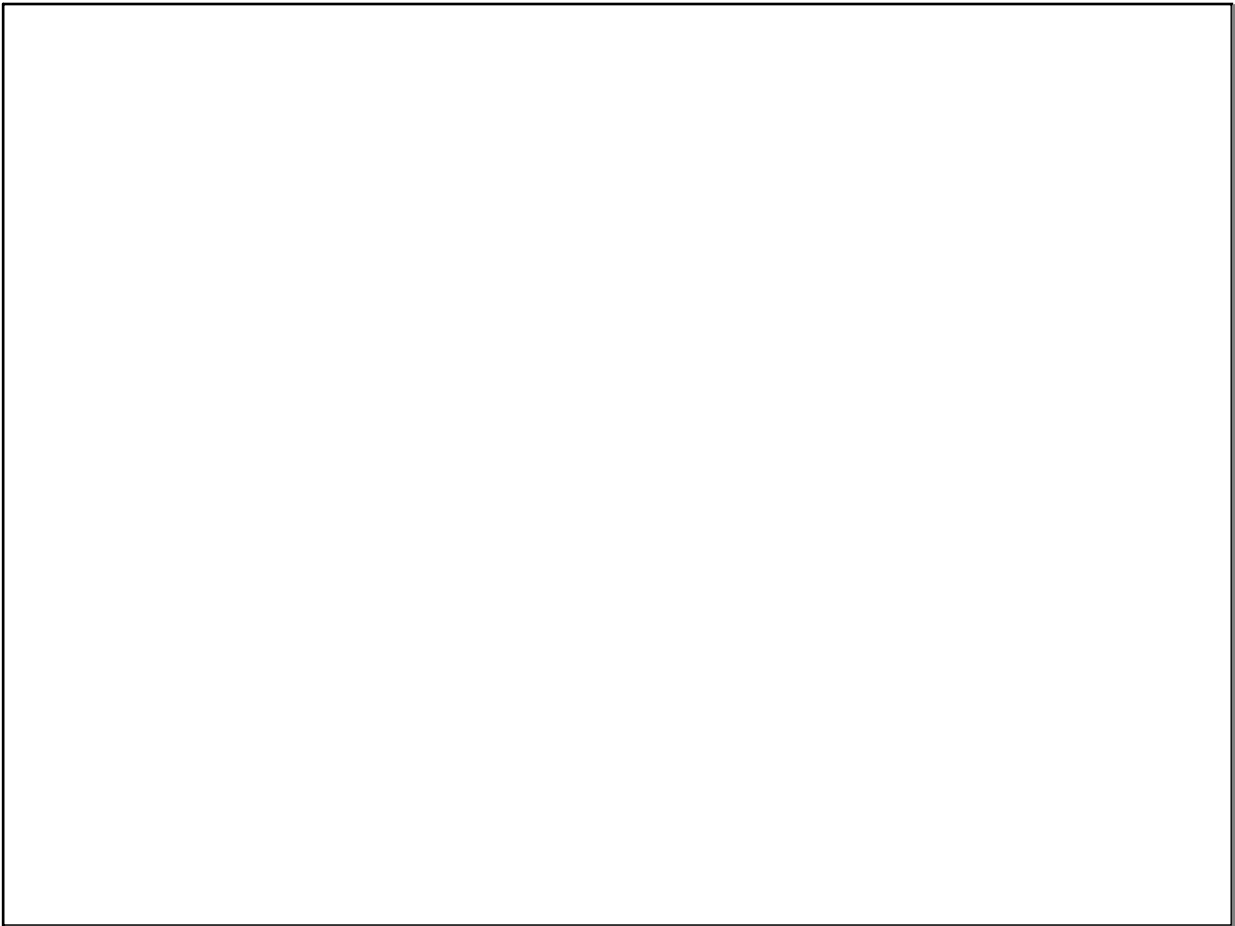
 in 4 hrs + 15 minutes → $\frac{191 \text{ km}}{4.25 \text{ hrs}}$

velocity → units? → km/hr

Sep 30-10:17 AM



Sep 30-10:20 AM



Sep 30-9:49 AM

1.2/1.3 Review

Grade: 8th
Subject: Physical Science
Date: 9/23

Sep 23-9:13 AM

1 _____ is the speed and ~~acceleration~~ direction of a moving object.

velocity

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2 Instantaneous speed is speed at a specific instant in time.

True

False

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3 _____ speed is the rate of change of position in which the same distance is traveled each second.

A Average

B Instantaneous

C Constant

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- 4 _____ speed is the total distance traveled divided by the total time taken to travel that distance.

average

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- 5 Acceleration is a measure of the change in velocity during a period of time.

True

False

$$a = \frac{\Delta v}{\Delta t}$$

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6 ^{average} ~~Instantaneous~~ acceleration is a change in velocity during a time interval divided by the time interval during which the velocity changes.

True

False

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7 It takes Ahmed 50 s on his bicycle to reach his friends house 250 m away. What is his average speed (in m/s)?

$$\frac{250\text{m}}{50\text{s}} \rightarrow 5\text{ m/s}$$

$$v = \frac{d}{t}$$

50

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- 8 A truck driver makes a trip that covers 2,380 in 28 hours. What is the driver's average speed (in km/h)? \rightarrow km

$$\frac{2,380 \text{ km}}{28 \text{ hrs}} \rightarrow 85 \text{ km/hr}$$

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- 9 Aidan drops a rock from a cliff. After 4.0 s, the rock is moving at 39.2 m/s. What is the average acceleration of the rock (answer in m/s/s)?

$$\frac{39.2 \text{ m/s} - 0 \text{ m/s}}{4.0 \text{ s}} = 9.8 \text{ m/s}^2$$

\rightarrow m/s/s

Sep 23-9:25 AM

10 What are acceptable units for velocity?

A g/mL \rightarrow density

B m/s/s \rightarrow acceleration

C km/h

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11 What are acceptable units for acceleration?

A g/mL \rightarrow velocity

B m/s

C m/s/s

Sep 23-9:27 AM